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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/514,699 02/28/00 ZHAO W D/98621

EXAMINER

IM22/0423

John E Beck
Xerox Corporation
Xerox Square 20A
Rochester NY 14644

DATE, J	
ART UNIT	PAPER NUMBER

1753
DATE MAILED: 04/23/01

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/514,699

Applicant(s)

ZHAO et al

Examiner

J. DOTE

Group Art Unit

1753

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 2/20/00
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1 - 20 is/are pending in the application.
- Of the above claim(s) 11 - 20 is/are withdrawn from consideration.
- ☐ Claim(s) is/are allowed.
- ☒ Claim(s) 1 - 10 is/are rejected.
- ☐ Claim(s) is/are objected to.
- ☒ Claim(s) 1 - 20 are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☒ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2 ☐ Interv w Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892 ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948 ☐ Other _____

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-10, drawn to a process for forming an image with a liquid developer, classified in class 430, subclass 117.

II. Claims 11-20, drawn to a liquid developer concentrate and a printing machine, classified in class 430, subclass 115, and class 399, subclass , respectively.

2. The inventions are distinct, each from the other because:

Inventions II and I (i.e., the liquid developer concentrate recited in claims 11-18) are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product can be used in a materially different process, such as the liquid development process described at page 2, lines 4-10. The process comprises the steps of diluting the liquid developer concentrate with a diluent to form a working liquid developer, placing the working liquid developer in a developing tank, developing an electrostatic latent image on a photoconductive member with the

working liquid developer by immersing the photoconductive member in the developing tank. The process does not require the formation of a developer cake on a liquid receiver member, nor does the process require reclaiming the undeveloped cake from the cake bearing liquid receiver member as recited in instant claim 1.

Inventions I and II (i.e., printing machine recited in claims 19 and 20) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced by hand.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, and as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Mr. Robert Thompson (Reg. No. 47,137) on April 16, 2001, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-10. Affirmation of this election must be made by

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applicant in replying to this Office action. Claims 11-20 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. It is noted that the instant application incorporates by reference in its entirety the liquid development apparatus and method described in abandoned US Application No. 08/963,360 (Application'360). See page 1, line 10, and page 22, line 29, to page 23, line 2, of the instant specification. It appears that the process and apparatus described in Application'360 is essential subject matter. Essential subject matter is defined in MPEP 608.01(p), Section A.

When the instant application is allowed, applicants will be required to amend the specification to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration stating that the amendatory material

consists of the same material incorporated by reference in the application. MPEP 601.01(p) Section A1.

6. The disclosure is objected to because of the following informalities:

The use of trademarks, e.g., BAKELITE® at page 19, line 18, has been noted in this application. The trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. The example is not exhaustive - applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point

out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite in the term "developer cake" because it is not clear what is the scope of the term "developer cake," which is not defined in the instant specification.

Claim 3 is indefinite in the phrase "developing an image" (emphasis added) because it is not clear whether "an image" recited in claim 3 refers to the image recited in claim 1, or to another image.

Claims 5 and 6 are indefinite in the phrase "second liquid develop [sic: developer] in the developer sump" (emphasis added) for lack of antecedent basis in claim 1. Claim 1 does not recite the presence of a developer sump.

Claim 7 is indefinite in the phrase "transferring the developed image to a second receiver substrate" (emphasis added) because it is not clear how the developed image can be transferred to a "second" receiver substrate when claim 1 does not recite transferring the developed image to a "first" receiver substrate. Moreover, the instant specification at page 14, lines 5-6, merely discloses transferring the developed image to a "second" receiver substrate. There is no disclosure of transfer to a "first" receiver substrate.

Claim 10 is indefinite in the phrase "the reclaimed developer cake is separated from the second liquid developer

until the solids content of the second liquid developer drops below from about 6 to about 10 weight percent" for lack of antecedent basis in claim 1. Claim 1 recites that the reclaimed developer cake is redispersed in the second developer liquid. In other words, the developer cake is dispersed in the second liquid developer in the form of toner particles or solids. It is not apparent how the redispersed toner particles from the developer cake can be separated from the toner particles already present in the second liquid toner to separate the reclaimed developer cake.

9. Claim 5 is objected to because of the following informalities: The typographic error "develop" in the phrase "second liquid develop." Appropriate correction is required.

10. The term "toner cake layer" recited in claim 1 is interpreted by the examiner to mean that the liquid toner layer formed on a developing donor has a concentration of at least about 10 wt% of toner particles. See US 6,122,471, col. 2, lines 19-22, which discloses that "a toner cake layer is generally characterized as having a high solids content (e.g., approximately 10-50 percent solids . . ."

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1, 2, and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,345,296 (Wellings) combined with US 5,254,427 (Lane), as evidenced by the EXXON product information bulletins for ISOPAR G and H.

Wellings discloses a process for forming a toner image comprising the steps of: 1) dispersing a liquid developer concentrate in the carrier liquid of a working liquid developer solution; 2) depositing the working developer solution onto a developer roller to form a liquid developer layer; 3) developing a latent electrostatic image formed on a photoconductor with the liquid developer layer; 4) transferring the developed image to paper; 5) reclaiming the unused liquid developer from the developer roller by scraping off the unused liquid developer with a blade; and 6) returning the reclaimed liquid developer to the working developer. Col. 4, line 64, to col. 5, line 32, Fig. 1, reference labels 14-21, 23, 24, 30, and 39. The latent

electrostatic image is formed on the photoconductor by a corona discharge. Col. 4, lines 45-47, and Fig. 1, reference label 2. Wellings discloses that the concentration of toner particles in the working liquid developer can range from 2 to 10 wt%. Col. 7, lines 26-29. The amount of 10 wt% toner particles in Wellings's working developer meets the amount of toner particles required to comprise a "toner cake" layer. See paragraph 10, supra.

Wellings further discloses that the concentration of the toner particles in the working liquid developer in the developing tank is monitored by a sensor. Col. 5, lines 24-27, and Fig. 1, reference label 33. The concentration of toner particles of the working developer is maintained at a predetermined concentration by dispersing the liquid developer concentrate in the working liquid developer. Col. 5, lines 27-32.

Wellings does not disclose that the liquid developer concentrate comprises the liquid developer reconstitution compound recited in instant claim 1. However, Wellings discloses that his liquid developer concentrate comprises toner particles, which comprise a binder resin and a colorant, and a carrier liquid. Col. 5, lines 34-45. The liquid developer concentrate has a high solids content, having a toner particle concentration ranging from 10 to 80 wt%. Col. 5, lines 38-45.

Lane discloses a liquid developer concentrate comprising up to 80 wt% of toner particles, a surfactant, and a carrier liquid,

such as ISOPAR G or H. Col. 3, lines 18-31, col. 5, lines 5-9. The surfactant can be a polydimethylsiloxane surfactant, a polyether surfactant, or AB block copolymers having amino sites. Col. 3, line 59, to col. 4, line 52, and examples 1-6. Lane discloses that the surfactant permits easy redispersion of the toner particles at the time of use. Col. 3, lines 9-15. Lane discloses that his liquid developer can be easily redispersed and eliminates the need for frequent disposal of liquid from the developing apparatus. Col. 3, lines 3-8.

Neither Lane nor Wellings discloses that the working liquid developer obtained from a liquid developer concentrate is a dielectric having a conductivity of from about 0.01 to about 5 pS/cm as recited in instant claim 4. However, both Wellings and Lane disclose that the carrier liquid used in the liquid developer concentrate and in the working liquid developer can be an aliphatic hydrocarbon such as ISOPAR. Wellings, col. 5, lines 37-38; Lane, col. 4, line 68, to col. 5, line 28. Lane discloses that ISOPAR liquids, such as ISOPAR L, G, and H, have a volume resistivity in excess of 10^9 ohm-cm and a dielectric constant below 3.0. Lane, col. 5, lines 5-10 and 37-40. EXXON product information bulletins disclose that ISOPAR G and H have a maximum specific conductivity of 5.0×10^{-14} (ohm-cm)⁻¹, which is 0.05 pS/cm. (pS/cm is 10^{-12} S/cm, where pS is a pico-siemen. 1 S/cm is equal to 1 mho/cm, which is equal to 1 (ohm-cm)⁻¹.)

Because the carrier liquids ISOPAR G and H have a conductivity that meets the conductivity recited in the instant claims, it is reasonable to presume that the working liquid developer obtained from Lane's liquid developer concentrate is a dielectric and has a conductivity that meets the limitation recited instant claim 4. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Lane, to use Lane's liquid developer concentrate comprising a surfactant as disclosed by Lane as the liquid developer concentrate in the process disclosed by Wellings, because that person would have had a reasonable expectation of successfully obtaining a process for forming a toner image using a liquid developer concentrate, where the toner particles in the liquid developer concentrate are readily redispersed into the working liquid developer.

13. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,826,147 (Liu'147) combined with Wellings and Lane, as evidenced by the EXXON product information bulletins for ISOPAR G and H.

Liu'147 discloses a process for forming a toner image comprising the steps of: 1) forming a latent electrostatic image on a photoconductive imaging member by a corona discharger and

image-wise exposure; 2) depositing a liquid developer solution on the photoconductive imaging member to form a "toner cake" layer from a liquid developer supply; 3) charging the "toner cake" layer in an imagewise manner by a corona discharger (i.e., scorotron device) before developing the electrostatic image with the "toner cake" to form a secondary latent image in the toner layer; 4) transferring the "toner cake" in the imaged areas of the imaging member onto a separator, leaving "toner cake" in the non-imaged areas on the imaging member, yielding a developed image on the separator; 5) transferring the developed image to a copy substrate; 6) reclaiming the "toner cake" in the non-imaged areas on the imaging member by scraping off the toner with a blade; and 7) returning the reclaimed toner to a toner sump or other reclamation vessel so that the "toner cake" can be recycled to be used again to produce the toner cake. Col. 7, lines 25-56, col. 8, lines 17-26, col. 9, lines 28-45 and 62-64, col. 12, lines 9-27 and 35-39, col. 12, line 67, to col. 13, line 12, and Figs. 1 and 2. Liu'147 discloses that the "toner cake" formed on the imaging member from the liquid developer desirably has at least approximately 10 wt% of toner particles. Col. 9, lines 6-9.

Liu'147 does not disclose dispersing a liquid toner concentrate as recited in instant claim 1. Nor does Liu'147 explicitly disclose that the reclaimed "toner cake" is added to

the liquid developer in the liquid developer supply. However, Liu'147 discloses that toner reclaiming disclosed in the relevant patent literature can be used in his process. Col. 13, lines 11-14.

Wellings discloses a process for dispersing a liquid developer concentrate into the carrier liquid of a working liquid developer solution for use in an electrostatic imaging forming process. Col. 1, lines 8-14 and Fig. 1. Wellings' process disperses a liquid developing concentrate in a developing tank at a rate equivalent to the consumption rate of toner particles in the working liquid developer in the developing tank. Col. 2, lines 1-5. Wellings discloses that the concentration of toner particles in the working liquid developer can range from 2 to 10 wt%. Col. 7, lines 26-29. The amount of 10 wt% toner particles in Wellings's working developer meets the desired amount of toner particles in the "toner cake" layer disclosed by Liu'147 formed from a liquid developer. Wellings further discloses that the reclaimed unused liquid developer scraped from a developer carrier can be returned to the working liquid developer in the developing tank. Col. 5, lines 2-4. Wellings teaches that the concentration of the toner particles in the working liquid developer in the developing tank is monitored by a sensor. Col. 5, lines 24-27, and Fig. 1, reference label 33. The concentration of toner particles of the working developer is

maintained at a predetermined concentration by dispersing the liquid developer concentrate in the working liquid developer. Col. 5, lines 27-32. Wellings discloses that his process provides a continuous process of providing a working liquid developer having a predetermined toner particle concentration versus a batch process which is time and cost ineffective. Col. 3, lines 16-19.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Wellings, to add the reclaimed unused "toner cake" disclosed in the process disclosed by Liu'147 to the liquid developer tank in the process disclosed by Liu'147, and to disperse a liquid developer concentrate, as disclosed by Wellings, into the liquid developer tank in the process disclosed by Liu'147, because that person would have had a reasonable expectation of successfully obtaining a liquid developer imaging process that continuously replenishes the liquid developer, maintaining a predetermined toner particle concentration that is time- and cost-efficient.

Wellings does not disclose that the liquid developer concentrate comprises the liquid developer reconstitution compound recited in instant claim 1. However, Wellings discloses that his liquid developer concentrate comprises toner particles, which comprise a binder resin and a colorant, and a carrier liquid. Col. 5, lines 34-45. The liquid developer concentrate

has a high solids content, having a toner particle concentration ranging from 10 to 80 wt%. Col. 5, lines 38-45. Neither Liu'147 nor Wellings limits the type of liquid toner used in their respective processes.

Lane discloses a liquid developer (toner) concentrate comprising up to 80 wt% of toner particles, a surfactant, and a carrier liquid, such as ISOPAR G or H. The discussion of Lane and Wellings with respect to the liquid toner concentrate in paragraph 12 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Lane, to use Lane's liquid developer concentrate comprising a surfactant as the liquid developer concentrate in the process rendered obvious over the combined teachings of Liu'147 and Wellings, because that person would have had a reasonable expectation of successfully obtaining a process for forming a toner image from a liquid toner using a liquid toner concentrate where the toner particles in the liquid developer concentrate are readily redispersed into the working liquid developer.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is

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(703) 305-3599 for after final faxes, and (703) 305-7718 for other official faxes.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JLD
April 20, 2001

Janis L. Dote
JANIS L. DOTE
PRIMARY EXAMINER
GROUP 1500
1700